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MILLIPEDS COLLECTED IN GUATEMALAN CAVES, INCLUDING *CALYMMODESMUS INQUINATUS*, N. SP. (STYLODESMIDAE: POLYDESMIDA)

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In June, 1959, William W. Varnedoe, Jr., collected four species of millipeds from Guatemalan caves, of which all are in limestone except La Cueva Camán, which is in volcanic ash. Three species of the millipeds, a colobognath and two spirostreptids, are undoubtedly epigean forms. There are no troglobitic representatives of the orders that they belong to. The fourth species is a small polydesmid of the genus *Calymmodesmus* without any apparent cave modifications other than the yellowish white body color. Additional collections from epigean sites in the vicinity of the cave are needed to establish the ecological classification of this polydesmid.

The male holotype and a female paratype of *Calymmodesmus inquinatus*, n. sp., are in the American Museum of Natural History, and male and female paratypes are in the United States National Museum. All of the remaining specimens in Varnedoe's collection will be retained by the author.

Genus *Calymmodesmus* Carl

Calymmodesmus Carl, 1914, Mém. Soc. Sci. nat. Neuchât., 5: 959. Attems, 1931, Zoologica, 30: 140–142; 1940, Tierreich, Lief. 70: 274–275. Schubart, 1952, An. Acad. Bras. Ciên., 24: 438. Loomis, 1959, Jour. Kansas Ent. Soc., 32: 1–2.

Type species: Calymmodesmus andinus Carl 1914.

Range: Ecuador to Mexico.

Number of species: Ten, of which several are myrmecophilous and one is cavernicolous.

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Yucodesmus, a genus closely related to *Calymmodesmus*, is represented by four species from Yucatan caves (Chamberlin, 1938) and one myrmecophilous species from Vera Cruz (Chamberlin, 1947). In the description of no species of *Yucodesmus* is the presence of minute spicules on the metazonites mentioned; this is a character of the genus *Calymmodesmus*, and its absence in *Yucodesmus* justifies the retention of *Yucodesmus*, at least as a subgenus. Schubart (1952) distinguished between *Calymmodesmus* and *Yucodesmus* by differences in the gonopods, which he did not point out, and by (in *Yucodesmus*) the equal size of the primary tubercles in the four longitudinal rows, the greater lateral projection of the pore cones, and the yellowish white color. Loomis (1959) suggested that the two genera are synonyms but deferred his decision until he had seen specimens of *Yucodesmus*.

The lobation of the collum and the paranota is not uniform through the species of *Calymmodesmus*. In *andinus* Carl from Columbia, the only species with 10 lobes on the margin of the collum, the outer lobe on either side is markedly broader than any of the eight intervening lobes and has a slight median emargination. In *bensifer* Loomis from Oaxaca and *carli* Attems from Ecuador the three outer lobes on either side form two very broad lobes with their component parts but faintly distinguishable, whereas the six intervening lobes are conspicuous. In the remaining species the outermost lobes of the collum are better developed than in the three named above and are almost equal to the intervening lobes. The paranota of segments 2 through 5 have three lateral marginal lobes each. On segments 6 through 16 there are usually four lobes, rarely three. The number of lateral lobes on segments 17, 18, and 19 is variable; usually there are four, sometimes there are three, occasionally five; on segment 19 they are present, absent, or very faintly indicated. The margin of the tergite of segment 20 is divided into six lobes, of which the middle two are closer together than any of the others.

Calymmodesmus inquinatus, new species

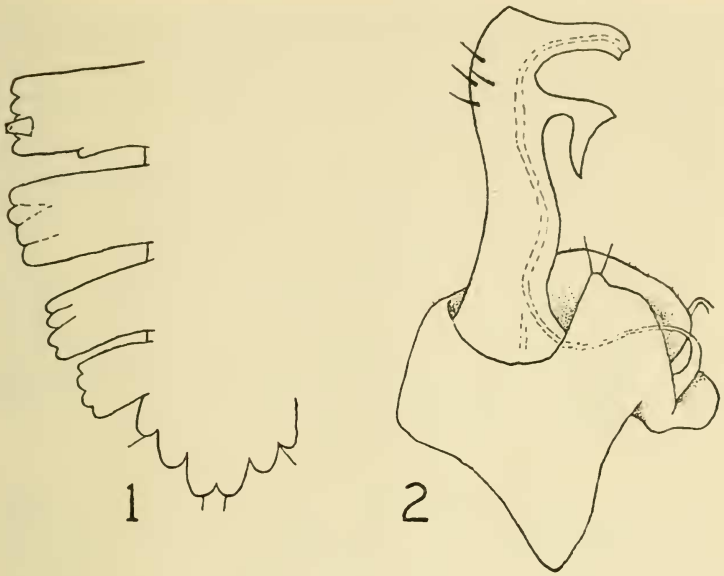
Figs. 1, 2

Diagnosis: Nearest *sodalis* Schubart in the structure of the gonopods and the body size; distinguished from that species by the lighter body color, the presence of radii on the margin of the collum, and the more prominent primary tubercles on the collum.

Type specimens: Male holotype and female paratype, American Museum of Natural History; male and female paratypes, United States National Museum and the author's collection.

Type locality: Gruta el Silvino, near Cayuga and Puerto Barrios, Guatemala; 3 ♂♂, 4 ♀♀; collected 13 June 1959, about 600 feet within the cave by W. W. Varnedoe, Jr.

Description of the male holotype: Color in alcohol whitish except for the pale yellow tubercles. Length about 9.5 mm, width 1.7 mm. Head covered by collum when viewed from above. Dorsum strongly arched and the paranota set low, their ventral surface almost horizontal. Seg-



FIGS. 1, 2

ments 1 and 2 very close together; remainder of body loose-jointed, with the length of the exposed parts of the prozonites of segments 4 through 14 as great as the length of the metazonites of those segments. Legs extend to lateral margin of paranota if straightened out. Metazonites thickly covered with short, fine, glassy spicules. Vertex of head with a rectangular granular area that is indistinctly divided into four vertical columns. Antennae short, the fifth segment thickened and twice as long as segment 6; segments 5, 6, and 7 each with a small pad of fine setae on the distolateral surface.

Collum with 12 marginal lobes, of which the outer three on either side are slightly smaller and less evenly formed than the intervening lobes; radii are between all of the lobes. Disk of collum strongly convex; the ten primary tubercles are large and in two rows; the outer primary tubercle is slightly smaller than the intervening ones. The secondary tubercles of the collum are arranged in an even row of 18 on the caudal margin; others are arranged irregularly around the primary tubercles; they do not extend out on the margin between the radii.

Segments 2 through 19 have the primary tubercles arranged in four rows of three tubercles on each segment; they are slightly smaller on the last few segments. On typical segments the primary tubercles in the medial rows are rounded and elongated transversely and those in the lateral rows are slightly smaller, conical, and rounded at the apex. The secondary tubercles of segments 2 through 19 are arranged as follows: two rows of four each between the medial primary tubercles, from three

to seven in one or two irregular rows between the medial and lateral primary tubercles, and about 20 laterad to the lateral primary tubercles and on the paranota. Surface of caudal segment granular. Lateral margin of segments 2 through 5 with three subequal lobes, segments 6 through 19 with four subequal lobes, and segment 20 with six subequal lobes, of which the middle two are closer together than the others (Fig. 1). One or two secondary lobes are on the caudal margin of the paranota of most segments. The pore cones are white; they cover the second lobe of segment 5 and the third lobe of segments 7, 9, 10, 12, 13, 15, and 16 and project slightly beyond the lateral margin of the adjacent lobes.

In situ the telopodites of the gonopods are freely exposed and directed caudad. The solenomerite crosses its homologue near the apex and the apex of the acute angle of the tibiotarsus is contiguous with its homologue. The large coxae are connected by a small piece. The sharply bent tibiotarsus (Fig. 2) distinguishes this species from others of the genus except *sodalis*; the femoral region is less curved than in that species. Anterior to the gonopods is a small, medial sternal peg.

Paratypes: The largest female paratype is 10.7 mm long and 1.8 mm wide; other somatic characters are as described for the male holotype. One male differs from all of the other specimens in the series in that the lateral lobes of segments 17 and 18 are less evenly formed, with four on one side and five on the other side of both segments.

Since the description of so many Central American species is inadequate, the determination of the three following species will be deferred until type material can be studied.

A female tentatively identified as *Scaphiostreptus* (S.) *discriminans* (Chamberlin 1922) was collected in total darkness a linear distance of about 450 feet from the entrance of Cueva Lanquín, 1 km northwest of the village of Lanquín and about 25 km east of Cobán, Department of Alta Verapaz.

A male and a female of the subgenus *Scaphiostreptus* were collected either near the entrance or about 300 feet from the entrance of Cueva Jobitzinaj, 3 km south of Flores, which is on Lago Petén, Department of Itza.

A large female of the genus *Siphonophora* was collected about 100 feet from the entrance of a small cave in volcanic ash, La Cueva Camán, which is near Lago de Atitlàn. It is evenly pale yellow, about 45 mm long, 1.9 mm wide, and has 108 body segments. It resembles *S. globiceps* Pocock 1903 but differs in that the beak is slightly longer and the anterior margin of the collum is slightly concave.

Literature Cited

Attems, C. 1931. Polydesmoidea III, *in*: Das Tierreich, Lief. 70: 1–577.

————. 1940. Die Familie Leptodesmidae und andere Polydesmiden. Zoologica, Stuttgart, 30 (Lief. 3/4, Heft 79): 1–149.

Carl, J. 1914. Die Diplopoden von Columbien nebst Beiträgen zur Morphologie der Stemmatoiuliden. Mém. Soc. Sci. nat. Neuchâtel, 5: 821–993.

Chamberlin, R. V. 1922. The millipeds of Central America. Proc. U. S. Nat. Mus., 60(8): 1–75, Pls. 1–25.

————. 1938. Diplopoda from Yucatan. Carnegie Inst. Washington Publ. No. 491: 165–182.

————. 1947. A new myrmecophilous milliped from Mexico. Pan-Pacific Ent., 23(3): 101–102, Fig. 1.

Loomis, H. F. 1959. New myrmecophilous millipeds from Barro Colorado Island, Canal Zone, and Mexico. Jour. Kansas Ent. Soc., 32(1): 1–7.

Pocock, R. I. 1903–1910. Diplopoda, *in* Biologia Centrali-Americana, Zoologia, Chilopoda and Diplopoda, pp. 41–217, Pls. 4–15.

Schubart, Otto. 1952. Um Diplopoda (Calymmodesmus sodalis n. sp.), companheiro do formigas em migração (Proterospermophora, Stylosedmidae). An. Acad. Brasileira Ciên., 24(4): 437–442, Figs. 1–8.

Explanation of Figures of *Calymmodesmus inquinatus*

Fig. 1.—Outline of the last five body segments, female paratype.

Fig. 2.—Left gonopod, anterior view, male paratype.